

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1 1. (currently amended) An optical switch, comprising:  
2 a first optical combiner for combining at least two optical pump signals to  
3 produce a combined pump signal, and a second optical combiner for combining  
4 an input data signal with the combined pump signal to produce a combined signal;  
5 a non-linear optical element for imparting a non-linear effect on the combined  
6 signal to generate a number of optical bands based on a simultaneous three-signal  
7 interaction of the at least two optical pump signals and the input data signal; and  
8 at least one optical splitter for separating the combined signal from said non-linear  
9 optical element into respective generated optical bands;  
10 wherein at least one of said at least two optical pump signals is controllably  
11 modulated such that a logic sequence of said input data signal is controllably switched.

1 2. (original) The optical switch of claim 1, further comprising at least two optical  
2 pump sources, each of said sources providing one of said at least two optical pump  
3 signals, wherein at least one of said at least two optical pump sources is adapted to  
4 controllably modulate its respective optical signal such that a logic sequence of said input  
5 data signal is controllably switched and an output signal of said optical switch comprises  
6 a multi-band switched optical signal.

1 3. (previously presented) The optical switch of claim 1, wherein said input data  
2 signal has a frequency that is substantially equal to an average of respective frequencies  
3 of said at least two optical pump sources.

1 4. (original) The optical switch of claim 2, further comprising a controller for  
2 controlling the modulation of the at least one modulated optical pump source.

1 5. (original) The optical switch of claim 2, wherein one of said at least two optical  
2 pumps is modulated and all other optical pumps are maintained constant.

1 6. (original) The optical switch of claim 5, wherein a resulting multi-band switched  
2 output signal is substantially a Boolean AND combination of the logic sequence of said  
3 input data signal and the logic sequence of said modulated optical pump signal.

1 7. (original) The optical switch of claim 5, further comprising a variable delay line  
2 for synchronizing the input data signal and the modulated optical pump.

1 8. (original) The optical switch of claim 1, wherein said non-linear optical element  
2 comprises a highly non-linear fiber.

1 9. (original) The optical switch of claim 1, wherein said non-linear optical element  
2 generates a parametric amplification of the combined signals.

1 10. (previously presented) The optical switch of claim 9, wherein said non-linear  
2 effect comprises difference frequency generation.

1 11. (original) The optical switch of claim 9, wherein an output of said optical switch  
2 comprises a replica of said input data signal and at least three idler signals.

1 12. (original) The optical switch of claim 11, wherein said at least three idler signals  
2 comprise at least two mirrored idler signals and at least one translated idler signal.

1 13. (original) The optical switch of claim 12, wherein said mirrored idler signals  
2 comprise input data signal conjugates.

1 14. (previously presented) The optical switch of claim 9, wherein each wavelength of  
2 said input data signal is converted into a corresponding wavelength in said respective  
3 generated optical bands.

1 15. (original) The optical switch of claim 2, wherein said optical pump sources  
2 comprise laser sources.

1 16. (previously presented) The optical switch of claim 1, wherein each of said first  
2 and second optical combiner comprises a band splitter.

1 17. (original) The optical switch of claim 1, wherein said at least one optical splitter  
2 comprises a band splitter.

1 18. (previously presented) A method of optical switching using a fiber parametric  
2 device having at least two optical pump sources, comprising:  
3 combining a signal from each of said at least two optical pump sources in a first  
4 combiner to produce a combined pump signal, and combining the combined pump signal  
5 with an input data signal to produce a combined signal;  
6 imparting a non-linear effect on the combined signal to generate a number of  
7 optical bands based on a simultaneous three-signal interaction of the two optical pump  
8 signals and the input data signal; and  
9 controllably modulating at least one of said at least two optical pump sources such  
10 that a logic sequence of said input data signal is controllably switched.

1 19. (previously presented) The method of claim 18, further comprising separating  
2 said generated optical bands using one or more band splitters.

1 20. (previously presented) The method of claim 19, wherein said non-linear effect  
2 generates a parametric amplification of said combined signal such that an output of said  
3 fiber parametric device comprises one or more switched optical signals corresponding to  
4 one or more of the generated optical bands.

1 21. (original) The method of claim 20, wherein the output of said fiber parametric  
2 device comprises at least a replica of said input data signal and three distinct idler bands.

1 22-23. (canceled)

1 24. (previously presented) An optical switch, comprising:  
2 a first optical combiner for combining at least two optical pump signals to  
3 produce a combined pump signal, and a second optical combiner for combining  
4 an input data signal with the combined pump signal to produce a combined signal;  
5 a non-linear optical element for imparting a non-linear effect on the combined  
6 signal; and  
7 at least one optical splitter for separating the combined signal from said non-linear  
8 optical element into respective generated optical bands;  
9 wherein at least one of said at least two optical pump signals is controllably  
10 modulated such that a logic sequence of said input data signal is controllably switched;  
11 and  
12 wherein said input data signal has a frequency that is substantially equal to an  
13 average of respective frequencies of said at least two optical pump sources.